

REMARKS

Applicant thanks the Examiner for the very thorough consideration given the present application.

Claims 17-28 are now present in this application. Claims 17 and 21 are independent.

Claims 1-16 have been canceled. Reconsideration of this application, as amended, is respectfully requested.

Rejection Under 35 U.S.C. § 112, 1st Paragraph

Claims 1, 4 and 5 stand rejected under 35 U.S.C. § 112, 1st Paragraph. This rejection is respectfully traversed.

Since claims 1, 4 and 5 have been canceled, the rejection is traversed herein with respect to the subject matter recited in the canceled claims, and now similarly recited in the new claims. The Examiner states that the original specification does not disclose the substrate not being exposed to air atmosphere, as recited in claim 1. While not conceding the appropriateness of the Examiner's rejection, the Applicant respectfully submits that independent claims 1, 4 and 5 have been canceled, thereby rendering the rejection thereof moot. New claim 17 recites a combination of elements, including the etching and cleaning equipment being comprised of modules joined end to end to form a unified structure, and moving the substrate from the etching line to the stripping line with no exposure to the outside of said unified structure.

The Applicant respectfully submits that new claim 17 complies with the written description requirement. In this regard, the Applicant's disclosure describes a conventional apparatus, which carries out conventional etching, stripping and cleaning processes as separate pieces of equipment. (see Applicant's original Specification, page 4, lines 5-15). This portion of the Applicant's specification establishes that exposure, and thus contamination, occurs because the substrate must be moved between (referring to the gap spaces) separate pieces of equipment. More particularly, the etched substrate must be moved from the etch module 42 (a first separate piece of equipment) to the strip module 44 (a second separate piece of equipment) and ultimately to cleaning module 48 (another separate piece of equipment). As also reflected by the distances between the modules as illustrated in Fig. 2, plainly, the substrate is moved to the outside of each of the above modules, then into some form of connecting means, and then into the next module. One difference between the several pieces of equipment of the conventional apparatus and the unified structure of the Applicant's claimed invention is that the modules of the Applicant's claimed invention are joined end to end with no space in-between them and there are no connecting means between the modules (compare Fig. 2 with Fig. 3 of Applicant's disclosure). The Applicant's written description refers to this arrangement as a single piece of equipment. The Applicant has a right to do so (the Applicant is the lexicographer) as long as the definition provided is not repugnant to the usual meaning of the

term. In this case, the meaning is clearly understood, and also supported contextually.

Further the Applicant's written description provides explicitly that the modules are unified (see Applicant's specification, page 4, lines 17-20). Further, the Applicant's written description provides explicitly that the substrates are kept within the unified structure (single piece of equipment). The substrate is not exposed (see Applicant's specification, page 7, lines 1-2).

Support for the subject matter as recited in the new claims is found in the above-cited portions of the Applicant's specification. Therefore, Applicant respectfully submits that the new claims are fully supported by and adequately described in the written description of the invention. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Rejection Under 35 U.S.C. 103

Claims 1, 4-8 and 12-14 stand rejected under 35 U.S.C. 102(a) as being unpatentable over Japanese Patent Publication 09-106978 to Miyazaki, in view of Japanese Patent Publication 09-106987 to Takeda, and claim 10 stands rejected over Miyazaki in view of Takeda as applied to claims 1, 4-8 and 12-14, and further in view of Iwai. Further, claims 15 and 16 stand rejected over Miyazaki in view of Takeda, and further in view of Toshima. These rejections are respectfully traversed.

Miyazaki and Takeda

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the present Application, Applicant respectfully submits that independent claim 1 has been canceled, thereby rendering the rejection thereof moot.

New independent claim 17 recites a combination of elements in an apparatus for processing a substrate, the apparatus being formed by combining etching and stripping equipment with cleaning equipment, the etching and cleaning equipment being comprised of modules joined end to end to form a unified structure, wherein the substrate is moved directly out of one of the modules into another one of the modules in succession, the unified structure including, a transfer module having an end thereof directly joined to an end of the etching line and an end thereof directly joined to the stripping line, for moving the substrate from the etching line to the stripping line with no exposure of the substrate to the outside of said unified structure; and the unified structure is sequentially arranged in the order the etching line, the transfer module, the stripping line, the elevator and the cleaning line.

Similarly, new independent claim 21 recites a combination of elements in an apparatus for processing a substrate, the apparatus including etching, stripping and cleaning equipment forming a unified structure comprised of modules joined together end to end, such that the substrate is not exposed to the outside of any of the modules during processing, including the unified structure is sequentially

arranged in the order the etching line, the transfer module, the stripping line, the elevator and the cleaning line.

Applicant respectfully submits that these combinations of elements, as recited in independent claims 17 and 21 are not disclosed or fairly suggested by the prior art of record.

As set forth above, the Applicant's disclosure has adequately defined a structure as a single piece of equipment (or unified structure) by the textual description and the drawings. For further clarification, the Applicant has provided a comparison between the claimed structure and a structure comprised of several pieces of equipment. On this point, the etch chamber 4 and stripper 8 of Miyazaki has wafer conveyance machine 5 and interim storage 6 forming a connection therebetween. Further, rinse stripper 8 and rinse room 11 of Miyazaki has interim storage 6 and transfer equipment 10 disposed therebetween. Therefore, Miyazaki does not teach or suggest a unified structure comprised of modules joined end to end without any exposure of the substrate to the outside of the unified structure. In this regard, the Examiner has admitted that the wafer of Miyazaki is indeed exposed to the outside of the structure, that is, the wafer is exposed in the storage room (see page 8 of the Office Action). Further, the sequential order of the modules of Miyazaki does not meet the Applicant's claimed sequential order.

On the other hand, Takeda teaches an etching chamber 2 and a stripper 43. Disposed therebetween are first washing chamber 4', first drying chamber 5' and

heating chamber 42'. Therefore, Takeda, like Miyazaki, does not teach or suggest the Applicants' claimed sequential order, or any other combination set forth above.

In view of the facts set forth above, the Applicant respectfully submits that the above-recited features of the Applicant's claimed invention are not disclosed or fairly suggested by the prior art of record, including Miyazaki and Takeda. Further, there is no motivation to combine these references to produce the Applicant's claimed invention. Further, a combination of these references would still not produce the Applicant's claimed invention. Neither Iwai, nor Toshima can supply the deficiencies of Miyazaki and Takeda.

New claims 18-20 and 22-28 depend, either directly or indirectly, on independent claims 17 and 21. Since neither Miyazaki, nor Takeda teaches or suggests the above-recited features of independent claims 17 and 21, Miyazaki, in view of Takeda, and further in view of Iwai and Toshima, cannot render these claims obvious to one of ordinary skill in the art. Reconsideration and withdrawal of these art grounds of rejection is respectfully requested.

DeOrnellas and Toshima

Claims 1, 4, 5, and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,672,239 to DeOrnellas in view of U.S. Patent No. 6,007,675 to Toshima. This rejection is respectfully traversed.

The rejected claims 1, 4, 5, and 15 have been canceled and new claims 17-28 have been added as set forth above. Applicant respectfully submits that the

combinations of elements recited in the new claims (17-28) are not disclosed or fairly suggested by the prior art of record.

Particularly, neither DeOrnellas, nor Toshima teaches or suggests the Applicant's claimed sequential order. Further, it is clear that some exposure to the outside occurs, as set forth in the Applicant's previous Reply. That is, DeOrnellas teaches that the strip module 24 is vented to atmosphere (DeOrnellas, Col. 3, lines 55-60). Strip module 24 contains wafer A (and subsequently all of the wafers) and therefore the wafers are exposed to the outside of the structure. Further, Toshima, like DeOrnellas, fails to teach or suggest the Applicant's claimed sequential arrangement.

Particularly, DeOrnellas and Toshima both fail to teach or suggest, either singly or in combination, combinations of elements in Applicant's claimed apparatus including the unified structure preventing exposure of the substrate to the outside of the structure.

Therefore, DeOrnellas, in view of Toshima cannot render claims 17-28 obvious to one of ordinary skill in the art. Reconsideration and withdrawal of this art grounds of rejection is respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be

withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

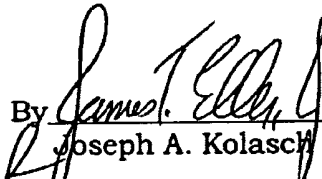
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Percy L. Square, Registration No. 51,084, at (703) 205-8034, in the Washington, D.C. area.


Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By  #39,538
Joseph A. Kolasch #22,463
P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000


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